Claims

1. A photovoltaic element comprising

a photon absorber (10) and

an electrically conductive large-surface working element (12) that is at least partly embedded in the photon absorber (10),

the working element (12) being separated from the photon absorber (10) by a phase boundary, and the working element (12) having a greater electron mobility than the photon absorber (10).

2. The photovoltaic element of claim 1, characterized in that the working element (12) is substantially electrically insulated.

3. The photovoltaic element of claim 1 or 2, characterized in that at least one conductor (14, 16) is at least partly embedded in the photon absorber (10), which conductor especially has the same composition as the working element (12).

4. The photovoltaic element of claim 3, characterized in that the working element (12) and the conductors (14, 16) are elongate and substantially parallel to each other.

5. The photovoltaic element of claim 3 or 4, characterized in that the conductors are configured as a positive conductor (14) and a negative conductor (16), the positive conductor (14) ending at or protruding beyond a first front side (18) of the photon absorber (10) and the negative conductor (16) ending at or protruding beyond a second front side (20) of the photon absorber (10).

6. The photovoltaic element of claim 5, characterized in that, in a multi-layered structure, at least two photon absorbers (28, 30, 32, 34) are provided that are in contact via an abutment surface (36) in which the positive conductors (14) and the negative conductors (16) are arranged such that the positive conductors (14) and the negative conductors (16) are separated from each other by the abutment surface (36).

7. The photovoltaic element of claim 5 or 6, characterized in that a plurality of positive conductors (14) are connected with each other through a first omnibus conductor (27) and a plurality of negative conductors (16) are connected with each other via a second omnibus conductor (26).

8. The photovoltaic element of one of claims 1-7, characterized in that the photon absorber (10) is substantially made of silicon, especially of anisotropic monocrystalline silicon.

9. The photovoltaic element of claim 8, characterized in that two respective photon absorbers (28, 32; 30, 34) have a mutually anti-parallel crystal structure.

10. The photovoltaic element of one of claims 1-9, characterized in that the working element (12) is made mostly, especially entirely, of metal.

11. The photovoltaic element of claim 10, characterized in that the metal of the working element (12) is from the 3. – 6. main group or is a subgroup metal from the 1. – 8. subgroup, its electron configuration preferably having a d-layer occupied by at least ten electrons.

12. The photovoltaic element of one of claims 1 – 11, characterized in that the working element (12) has an electric conductivity higher than 1.4 Ω^{-1} cm^{-1}, preferably higher than 1.6 Ω^{-1} cm^{-1}, more preferred higher than 2.0 Ω^{-1} cm^{-1}.

13. A photovoltaic device comprising a receiving element (54) with recesses (56) in which at least one photovoltaic element (44) of one of claims 1-12 is arranged, wherein conductors (14, 16) present in the photovoltaic element (44) are each connected to omnibus conductors (26, 27).

14. The photovoltaic device of claim 13, characterized in that a plurality of photovoltaic elements (44) are arranged in at least one recess (56), the recess (56) being in contact with at least one photon absorber (10) of the photovoltaic element (44).

15. The photovoltaic device of claim 13 or 14, characterized in that a plurality of first connecting conductors (46) and a plurality of second connecting conductors (48) are each connected with first current conductors (50) and second current conductors (52), respectively.

16. The photovoltaic device of one of claims 13-15, characterized by connecting means for mechanically and electrically connecting at least two photovoltaic devices (42) arranged side by side.